Back to the Future: Migration, Matching and the Power Couple Phenomenon in Sweden*

Sofia Tano†, Olle Westerlund†‡, Robert Nakosteen§, Michael Zimmer**

Abstract

This paper contributes to a recent and growing literature addressing the phenomenon of high-credentialed power couples. It seeks to determine the extent to which precursors of power couple formation and location choice of couples at midlife are evident in young people during their formative school years. Its second objective is to extend the analysis of location choice by modeling location choice among different sizes of labor market areas, given different power status of the couples.

Based on analysis of Swedish register data, we produce evidence that power spouses evolve from the population of high achieving school age individuals, the latter identified by high academic performance during the years of compulsory schooling. Other factors such as parental education and family income also play a role. In addition, there appear to be regional disparities in the evolution of power couples. The evidence also points to the presence self-selection arising from unmeasured heterogeneity, both in spouse matching and to a lesser extent in location choice. Regarding location choice, the results indicate that power couples display a disproportionate tendency to migrate from their regions of origin to large cities.

Keywords: Early markers; education; location choice; marital matching

JEL Classification: I21; J12; J24

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† Umeå Univeristy, Umeå, Sweden

‡ Jyväskylä University, Jyväskylä, Finland

§ University of Massachusetts, Amherst, USA

** University of Evansville, USA

I. Introduction

Household migration is commonly viewed as human capital investment undertaken in a family context. Family formation, in turn, is recognized to occur through matching of physical and social traits of prospective spouses. If there exist some common elements that characterize the location preferences of migrant families, or if they share some important factors determining the costs of migration, then we might expect to see some extent of clustering with respect to economic or social traits of migrant households. These commonalities then lead indirectly to a concentration of favored locations that possess a degree of agglomeration in those traits that drive migration.

One important aspect of spouse matching is educational attainment. A large volume of research suggests that individuals tend to select spouses of similar completed schooling (see, e.g., Schwartz and Mare, 2005). At the same time, education appears to be an impetus for migration (Machin, Pelkonen, and Salvanes, 2012). If these two phenomena play out simultaneously in the processes of spouse matching and migration, then a subset of favored locations might as a matter of course be populated by migrant populations comprising highly educated spouses. This "power couple" phenomenon has recently attracted the attention of economists. Costa and Khan (2000) for example, report that couples in which both spouses possess university degrees tend to migrate to large cities. As Greenwood (1997) points out, this was recognized earlier by Alfred Marshall in his *Principles of Economics*:

> *"…the large towns and especially London absorb the very best blood from all the rest of England; the most enterprising, the most highly gifted, those with the highest physique and strongest character go there to find scope for their abilities" (1948:199).*

Applied to family migration, this idea gives rise to the power couple phenomenon. A power couple, according to the existing literature, is a union where both partners possess relatively strong human capital in the form of academic qualification. Research to date on power couples has focused on why they tend to choose large metropolitan areas as destinations. Costa and Khan (2000) argue that migration is a solution to the colocation problem: power couples seek large cities in order to maximize employment opportunities that match their respective credentials. Compton and Pollak (2007), on the other hand, advance the idea that large cities provide the venue in which power couples are formed. In their view, "power singles" migrate to large labor markets, where they tend to match with similarly endowed spouses. Gautier *et al.* (2010) report that power singles and power couples tend to possess opposing migrant tendencies, as singles move to large cities and couples have a modest tendency to migrate out of the cities.

The literature has attempted to explain completed migration outcomes using data on existing power couples and has paid less attention to factors that determine formation of power couples in the first place. This study takes both these processes into account, where two objectives serve as a foundation of this paper. One is to delineate traits of individuals, observed prior to marriage and before completion of human capital investment, that tend to explain formation of power couples as well as their subsequent location choice. The second objective is to model the location choice for couples among size categories of labor market areas. The two objectives will be addressed by using longitudinal register data from Sweden in estimation of a trivariate probit model for individual power status, power couple formation and location choice. Following the approach of Compton and Pollak (2007), we also estimate a multinomial logit model to identify differences by power couple status when it comes to location choice among size categories of labor markets. Again, the emphasis is on explaining these outcomes on the basis of economic or social antecedents that existed prior to individuals' attainments of power couple status.

The analysis is based on data registers from the Swedish population. We have access to data files on two entire cohorts of individuals with yearly observations their early thirties. Our assumption is that the terminal age of the data file captures the preponderance of power capital formation in the population. The sample also captures to a large extent the regional distribution of skills and human capital due to the relatively low rate of migration between regional labor markets after the age of 30.

A distinguishing contribution of this study is that we exploit the rich longitudinal nature of the data to track spouses (from their early thirties) back in time to age 16. In the Swedish school system nine years of comprehensive school is mandatory, encompassing ages 7 to 16. Thus, using the baseline age of 16, before individuals attempt to achieve higher education credentials, allows us to discern whether they possess demographic or economic markers as teenagers that effectively predict their later power couple and location outcomes. Our results are strongly suggestive that such precursors do exist. Of particular interest, to be reported in a later section, is that these adult outcomes are associated with important indicators of latent ability and other unobserved traits of importance for the formation and location of power couples. For policy purposes, it is also useful to explore antecedents to power couple formation and location choice. In particular, it is of interest to examine whether individual characteristics that are established well before those decisions are made can be used in explaining the outcomes. Policy issues associated with power couple location and formation are particularly important for Sweden. By virtue of geography, the large metropolitan areas in Sweden, namely Stockholm, Göteborg and Malmö, are located in its southern regions. Consequently, power couple migration

to cities also constitutes movement from north to south, which has implications for "brain drain" and the stock of human capital in the middle and northern regions. A similar pattern applies within the middle and northern regions, and basically all regions outside the metropolitan areas. There is net-migration from rural areas to cities and increased concentration of highly educated to university towns and to some cities at the coast.

The remainder of the paper addresses these issues. Section II clarifies the background and motivation for the study, including a review of previous studies. Section III describes the data, while Section IV establishes the econometric framework of the two estimated models. Section V presents the estimated parameters, and Section VI is a final assessment.

II. Background

Couples in which both spouses possess high levels of education tend to locate in large metropolitan areas, a phenomenon which has apparently increased over time (Costa and Khan, 2000: Table III). This trend has attracted attention of researchers. Recognizing that educated couples seek to maximize their joint employment prospects, Costa and Khan (2000) argue that this colocation imperative leads couples to gravitate to large cities, which offer in sheer numbers the greatest job opportunities. Their evidence, based on U. S. Census data ranging from 1940 to 1990, documents the growing incidence of power couples and attributes approximately two thirds of observed location choice to the colocation problem.

Compton and Pollak (2007) hypothesize that the sequence of couple formation and location is reversed. Using a sequence of two-year panels from the 1980 – 1993 waves of the Panel Study of Income Dynamics, they argue that cities are attractive to power *singles,* and their presence in the marriage markets of large cities leads, through the process of spouse matching, to formation of power couples. Gautier *et al.* (2010) using the Integrated Database for Labor Market Research, compiled by Statistics Denmark, extract a Danish cohort born from 1955 to 1965 and follow it from 1980 to 1995. They consider the marriage market explicitly and construct an index of economic attractiveness for each individual, using education, income, and father's education and income. Although the Danish study is based on richer data, it appears in principle to be analogous to the individual power concept used by Costa and Khan (2000) and Compton and Pollak (2007), as individuals with higher index values of attractiveness are potential power spouses. Gautier *et al.* (2010) find that power singles are more likely to migrate to large metropolitan areas and are less likely than marrieds to return-migrate to rural areas.[2]

More recently, Løken, Lommerud, and Lundberg (2013) examine location choice by young couples in Norway. Their results indicate that location choices tend to favor proximity

to husbands' families, a phenomenon driven largely by low mobility of non-university educated men, particularly in rural areas.

These studies are useful in explaining the extent to which location choices of existing couples can be attributed to underlying job related incentives.

III. Data and Descriptive Statistics

The data for this study are extracted from the Linnaeus data base at Umeå University, which contains population registers administered by Statistics Sweden.[3] We have access to men and women born in 1974 and 1976, with longitudinal data for each individual until their early thirties. By construction, the sample is based on individuals who were married or cohabiting in 2006, and their respective partners at the time (hereafter, we refer to the partners as spouses).[4] The total amount of observations amounts to 86,150. In the trivariate probit model, we measure three essential outcome variables for each individual at that point: (1) a dichotomous variable indicating completion of a university degree, consistent with the power credential used by Costa and Khan (2000) and Compton and Pollak (2007); (2) a dichotomous variable indicating completion of university degree by the spouse; and (3) a dichotomous variable indicating residence in a metropolitan area.

Comparing the Labor Market Area (LMA) of residence of the individual at age 16 with the LMA of residence of the couple in 2006, produce four categories of the location choice variable in the multinomial logit model: (1) no migration from home LMA (*Stay_2006*); (2) migration to large LMA: Stockholm region, Göteborg or Malmö (*LLMA_2006*); (3) migration to medium size LMA (*MLMA_2006*); and (4) migration to small size LMA (*SLMA_2006*). For the purpose of this study, we define large metropolitan Labor Market Areas (LLMA) as those encompassing Stockholm, the adjoining Stockholm region, Göteborg, or Malmö.[5] The remaining Labor Market Areas are defined as medium (MLMA) or small (SLMA), depending on population size. The set of Labor Market Areas constitutes a geographic partition of Sweden, based on population densities and commuting patterns. They are defined on the basis of an algorithm such that individuals residing on one Labor Market Area are unlikely to commute outside for job reasons. Appendix A shows a map of how the different types of LMAs are located across the country.

Since all individuals are married or cohabiting, we classify couples as *Power_MW*, when both spouses possess university degrees; *Power_M*, when only the man has completed a degree; *Power_W*, when only the woman has completed a degree; and *Non-Power*, when neither individual has completed a degree.

For all remaining variables, we track each individual back to approximate age 16. The motivation is to capture individual attributes at a point in time before formation of power couples commences. Stated differently, the unit of observation is a young individual at a formative stage of entry into adulthood. At that point, she or he has not yet realized the outcome variables of education, spouse selection and location choice. In the model, however, to be described in the following section, the outcomes are observed, and they become dependent variables. The exact sequences of events are not observed, e.g. individuals may have been an unmarried couple before completion of university education. However, this is of none or only minor importance for our purpose.

In order to capture the individuals' measured potential power during youth, we use scholastic achievement at age 15, measured by the average grade from year 9 of compulsory school. For empirical purposes, we use the quartile rank, ranging from *Quartile 1* (lowest) to *Quartile 4* (highest).[6] In addition, recognizing that individuals possess latent attributes that portend future power status; we use a simple procedure to construct a proxy for unmeasured heterogeneity. First, we regress the individual's year-9 grade on his parents' educational attainments and the average grade for all students in his parish.[7] From that regression we calculate the *Grade Residual*, which captures the difference between the actual grade and the regression adjusted mean conditional on parental background and parish average level of schooling achievement. A positive value of the grade residual indicates a higher ability compared to what the individual "should have" with respect to his/her prerequisites.

To control for elements of family background, we measure total income of the family when the individual is 16 (*Family Income*) and dichotomous variables for each parent, indicating whether the parents earned university degrees (*Father Degree* and *Mother Degree*). We also record dichotomous variables for the individual, indicating whether he/she resided in a large metropolitan Labor Market Area at age 16 (*LLMA_16*); medium Labor Market Area at age 16 (*MLMA_16*); or small Labor Market Area at age 16 (*SMLA_16)*. For the spouse, we have dichotomous variables indicating parents' schooling (*S_Father Degree, S_Mother Degree*) and Labor Market Area of origin (*S_Origin_LLMA, S_Origin_MLMA, S_Origin_SLMA*).

Variable definitions and descriptive statistics for the sample (in 2006) are presented in Table 1.

Table 1. Variable definitions and sample statistics.

Variable	Definition	Sample Mean	Sample S.D
Individual:			
GPA 9th year	The average grade for the individual from last year of compulsory school (year 9, age 15).	3.24	0.68
Quartile 4	Equal to 1 if the individual belongs to the top quartile of the GPA distribution.	0.24	0.43
Quartile 3	Equal to 1 if the individual belongs to the second highest quartile of the GPA distribution.	0.27	0.44
Quartile 2	Equal to 1 if the individual belongs to the second lowest quartile of the GPA distribution.	0.26	0.44
Quartile 1	Equal to 1 if the individual belongs to the lowest quartile of the GPA distribution.	0.23	0.42
Grade Residual	A measure that reflects the unexplained heterogeneity of the GPA with respect to parental background and average GPA in the parish.	0.00	0.96
Family Income	Total yearly gross income of both parents for individual when young, in thousands SEK (measured when the individual is 19).	310.4	168.1
Father Degree	Equal to 1 if the father has a university degree.	0.17	0.37
Mother Degree	Equal to 1 if the mother has a university degree.	0.24	0.43
Origin:			
LLMA 16	Equal to 1 if the individual is originally from a large labor market area (LMA).	0.37	0.48
MLMA 16	Equal to 1 if the individual is originally from a medium size LMA.	0.43	0.50
SMLA 16	Equal to 1 if the individual is originally from a small size LMA.	0.20	0.40
Mideast Sweden	The individual originates from middle of Sweden, the region outside and around Stockholm (SE12).	0.18	0.39
Southeast Sweden	The individual originates from the south east region of Sweden (SE21).	0.11	0.31
Middle Sweden	The individual originates from the middle part of Sweden (SE31).	0.10	0.30
Southern Norrland	The individual originates from the southern part of northern Sweden (SE32).	0.05	0.22
Northern Norrland	The individual originates from the northern part of northern Sweden (SE33).	0.07	0.25
West	The individual originates from the western region of Sweden, including the metro area of Gothenburg (SE23).	0.20	0.40
South	The individual originates from the southern region of Sweden, including the metro area of Malmo (SE22).	0.14	0.35
Stockholm	The individual originates from the Stockholm region (SE11).	0.15	0.35
Spouse:			
S_ Father Degree	Equal to 1 if the partner's father has a university degree.	0.15	0.36
S_Mother Degree	Equal to 1 if the partner's mother has a university degree.	0.22	0.41
S_Origin LLMA	Equal to 1 if the partner is originally from a metro area (large LMA).	0.31	0.46
S_Origin MLMA	Equal to 1 if the partner is originally from a medium size LMA.	0.36	0.48
S_Origin SLMA	Equal to 1 if the partner is originally from a small size LMA.	0.33	0.47

Table 1. Continued.

Variable	Definition	Sample Mean	Sample S.D
Couple:			
Power_MW	Equal to 1 if both partners have a university degree.	0.25	0.43
Power_M	Equal to 1 if only the husband has a university degree.	0.07	0.26
Power_W	Equal to 1 if only the wife has a university degree.	0.20	0.40
Low Power	Equal to 1 if neither of the partners have a university degree.	0.48	0.50
LLMA_2006	Equal to 1 if the individual migrated to a large LMA by 2006.	0.14	0.35
MLMA_2006	Equal to 1 if the individual migrated to a medium size LMA by 2006.	0.10	0.31
SMLA_2006	Equal to 1 if the individual migrated to a small size LMA by 2006.	0.04	0.20
Stay_2006	Equal to 1 if the individual stays in their home LMA.	0.72	0.45

IV. Statistical Framework

The empirical analysis consists of two econometric models. The first is a trivariate probit model which addresses three questions. First, are youth characteristics useful in explaining adult outcomes with respect to power couple formation and second, location choice? Third, is there evidence of self-selection on the basis of unmeasured as well as measured individual heterogeneity? The second model, a multinomial logit model address one main question: Focusing on the location aspect, is the model capable of discerning location propensities, hence agglomeration of skills and human capital of couples that favor large Labor Market Areas as opposed to those of medium or small size?

Power Couple Formation

To address the first question, for each individual at the year 2006, define latent indexes for completed education attainment, Y_{1i}^*, spouse's education, Y_{2i}^*, and location in a large metropolitan Labor Market Area, Y_{3i}^*:

$$Y_{1i}^* = \beta' x_i + \varepsilon_i \quad (1)$$

$$Y_{2i}^* = \gamma' w_i + \nu_i \quad (2)$$

$$Y_{3i}^* = \delta' z_i + \eta_i \quad (3)$$

For equation (1), the individual is observed to have completed a university degree if $Y_{1i}^* > 0$, and does not complete a degree if $Y_{1i}^* \leq 0$. The vector x represents a set of explanatory variables

(described in Section III) and β is a conformable vector of unknown coefficient parameters. The random error term ε is assumed to be normally distributed with zero mean and variance equal to one. Equations (2) and (3) can be interpreted analogously.

The latent index is not observed. Instead for each outcome variable we observe:

$Y_i = 1$ if $Y_i^* > 0$

$Y_i = 0$ if $Y_i^* \leq 0$.

Conceived in this fashion, each equation (1, 2, 3) is a probit model:

$$P[Y_i = 1 | x_i] = \Phi(\beta' x_i),$$

where Φ denotes the cumulative distribution function of a standard normal distribution. The coefficients and their standard errors can be estimated by means of maximum likelihood probit methods. Assuming that the three processes are interrelated through latent characteristics (i.e. correlated error terms), joint estimation of equations 1, 2 and 3 as a trivariate probit model yield efficient estimates and information on residual covariance.

To clarify terms, the primary individual, *i* in the couple is referenced in equation (1)-(3), and that person (hereafter "individual") defines the unit of observation for empirical analysis. It bears repeating that the left hand side variables are adult outcomes observed in 2006, at approximate age 32, while the right hand side variables are antecedents of the outcomes, measured at age 16. If equations (1) – (3) are conceived as a set of jointly determined outcomes, then three useful parameters emerge. The covariance between error terms in (1) and (2), $\sigma_{\varepsilon\nu}$, measures the extent of association between unmeasured factors determining the individual's attainment of a university degree and matching with power spouse. The covariance for equations (1) and (3), $\sigma_{\varepsilon\eta}$, relates unmeasured factors that simultaneously determine the individual's attainment of university education and location in a large LMA; and $\sigma_{\nu\eta}$ measures the analogous covariance between latent characteristics affecting power status of the spouse and location of the couple. A positive value of the latter parameter, for example, would indicate that individuals who possess unmeasured tendencies to marry a partner with a university education also possess unmeasured propensities to locate in large metropolitan LMA's. Since the covariance parameters are estimated while controlling for measured background factors, they serve as measures of latent self-selection with respect to power couple matching and location choice. This issue has not been addressed in the power couple literature.

Together, the estimated probit coefficients and covariances provide insight about matching of spouses as power couples and their location choices. A descriptive idea of the underlying selection process on observed characteristics can be seen in Table 2.

Table 2. Sample Frequencies: Adult Outcomes.

	Entire Sample		**LLMA Origin**		**MLMA or SLMA Origin**	
	All Quartiles	Top Quartile	All Quartiles	Top Quartile	All Quaritles	Top Quartiles
University Degree	.39	.80	.39	.75	.40	.80
Power Spouse	.62	.69	.64	.71	.61	.68
Non-power Spouse	.38	.31	.36	.29	.39	.32
Power Couple	.25	.55	.25	.56	.24	.55
Reside LLMA	.58	.61	.88	.90	.40	.47
Outside LLMA	.42	.39	.12	.10	.60	.53
N	90,538	21,487	33,254	8,500	57,284	12,987

The table displays sample proportions of degree attainment, power couple status, and residence cross tabulated with (1) grade quartile and (2) LMA size of residence at age 16. The first row verifies, as expected, that university completion is more frequent among individuals in the highest grade quartile. Rows 2 and 3 show that, among university graduates, a comfortable majority matches with spouses of similar education, and that extent of matching appears stable across large and small LMA's of origin.

The lower portion of the table, restricted to power couples, shows some interplay between school grades and LMA size of origin. First, for individuals who originate in LLMA's, the dominant location choice at adult age is to remain in LLMA's for all grade quartiles. Second, for those who originate in smaller regions, the majority choose smaller regions as adults. Here, however, the tendency is not as pronounced as in the case of those originating in LLMA's. In addition, the table hints of a process of endogenous selection of power couples and their locations. Focusing on power couples and the highest grade quartiles, individuals who originate in LLMA's show strong preferences for LLMA's; only 10 percent reverse their backgrounds by choosing to locate in smaller LMA's. The reverse choice is more frequent among those who originate in smaller LMA's, as 47 percent locate in LLMA's.

Location Choice: Multinomial Logit Model

The second focus of the empirical analysis is to model the choice of location, delineated by Labor Market Area size, as a function of couples' characteristics and individual background factors. Following the approach of Compton and Pollak (2007), we partition the choices into large, medium and small metropolitan areas and use a multinomial logit model of choice. The

destination choice is as of 2006, and the reference location is stayers who reside as of 2006 in their LMA's of residence from age 16. The model includes as explanatory variables a vector of youth-age antecedents. In addition, unlike equations of the probit model, the logit model contains explanatory variables representing the couple's attainment of power status, where couple formation occurs after age 16.

The multinomial model extends the location choice to account for four destination categories. The unit of observation is a couple in 2006. For couple *i*, with attributes r_i, the location choice L_{ij} occurs with probability $P[L_{ij} \mid r_i]$:

$$P[L_{i1} \mid r_i] = \frac{1}{1 + \Sigma_{k=2}^{4} e^{\alpha_k' r_{ik}}} \text{ , j = 1} \qquad (4)$$

$$P[L_i = j] = \frac{e^{\alpha_j' r_{ij}}}{1 + \Sigma_{k=2}^{4} e^{\alpha_k' r_{ik}}} \text{ , j = 2, 3, 4}$$

The migration choices are mutually exclusive:

$L_{ij} = 1$: *Stay_2006,* residing in the age-16 LMA of origin

$L_{ij} = 2$: *SLMA_2006,* migrate from LMA of origin to small LMA

$L_{ij} = 3$: *MLMA_2006,* migrate from LMA of origin to middle size LMA

$L_{ij} = 4$: *LLMA_2006,* migrate from LMA of origin to large LMA (Stockholm region, Göteborg or Malmö).

In this model, consistent with Compton and Pollak (2007), we base the logit estimates on existing couples. To adhere to their general approach, the right hand side vector of explanatory variables r_i includes designations of the couples as described in Section III: (1) *Power_M,* part power due to husband's completion of university education; (2) *Power_W,* part power due to wife's completion; and (3) *Power_MW,* power couple due to completion by both spouses.

V. Results of Estimation

Tables 3, 4 and 5 display the estimated parameters of the trivariate probit model represented, respectively, by equations (1) – (3). As described in Section IV, this approach produces estimates of pairwise covariances between the respective random error terms. Provided in Table 6, those estimates serve as measures of self-selection on the basis of unmeasured individual heterogeneity. For all estimates, standard errors are in parentheses.

Recalling from Section II that the unit of observation is an unmarried individual in her or his youth years, the adult outcomes represented by the dependent variables might be influenced by the youth's region of origin. In particular, parameters in equations (1) – (3) for

persons from large metropolitan LMA's might differ from those whose backgrounds are outside those areas. To address that issue, we partition the sample accordingly and present the separate estimates in Tables (3) – (5). Within each partition, we utilize dichotomous variables in the model specifications to further delineate the region of origin. This gives us 31,489 individuals who start out in a Large LMA (Origin LLMA), and 54,661 individuals who start out in a small or medium LMA (Origin MLMA SLMA). For the small and medium LMA partition, the dummy variables distinguish Southeast Sweden, Middle Sweden, Western Sweden, Southern Sweden, Southern Norrland, and Northern Norrland from the reference region of Mideast Sweden.[8] For the large region partition, dummy variables identify major metropolitan areas. The latter variables include Western Sweden, for Göteborg, Southern Sweden for Malmö; and the metropolitan portion of Mideast Sweden, which includes the heavily populated area immediately west of Stockholm. The reference region for the set of regional dummy variables is Stockholm itself. [9]

Individual's Attainment of University Degree

Referring first to equation (1), the results are presented in Table 3. Columns 1 and 2 present results for the large metropolitan sample partition, and columns 3 and 4 are restricted to origins outside the metropolitan areas. Within each pair of columns, the specifications differ by inclusion of the ninth year school grade residual, as described in Section II.

Estimates in the first column indicate that degree completion is significantly explained by the youth's quartile in the distribution of her or his cohort's grades. The ascending magnitude of the quartile coefficients further support the *a priori* expectation that future degree attainment is associated in a monotonic fashion with youth grades. The estimates confirm also that individuals from more affluent families and those with more highly educated parents are significantly more likely to complete university education. Recalling that the sample for columns 1 and 2 originates in large metropolitan areas, estimates for the region dummy variables indicate that, holding grades and family background constant, young persons from West and South Sweden are significantly more likely to complete degrees that their counterparts from the (reference) Stockholm region. Metropolitan Mid East Sweden, contiguous to Stockholm, appears not to differ significantly from Stockholm as a source of university graduates. As expected, the results indicate that females have a higher probability than males of attaining a university degree.

The second specification adds the youth grade residual. As described in Section II, it is measured as the discrepancy between the individual's school grade in compulsory year 9 and the regression-adjusted grade of the year-9 cohort in his parish and parental background. We assume that students can achieve large positive residuals through a combination of latent ability,

effort and motivation. Thus the residual is a measure of what otherwise would be unobserved heterogeneity in youth achievement.

Table 3. Trivariate Probit Model Estimates: Equation 1. Completing a University degree (***Power***)

Variable	**Origin LLMA**		**Origin MLMA SLMA**	
GPA Q4	2.172**	0.617**	2.198**	0.930**
	(0.022)	(0.064)	(0.031)	(0.076)
GPA Q3	1.437**	0.404**	1.439**	0.606**
	(0.020)	(0.044)	(0.030)	(0.053)
GPA Q2	0.750**	0.156**	0.754**	0.258**
	(0.021)	(0.030)	(0.030)	(0.040)
Residual		0.617**		0.489**
		(0.025)		(0.029)
Female	0.175***	0.418***	0.113**	0.308**
	(0.013)	(0.016)	(0.017)	(0.020)
Family income	0.093**	0.164**	0.070**	0.130**
	0.005)	(0.006)	(0.005)	(0.007)
Mother Degree	0.372**	0.586**	0.430**	0.605**
	(0.025)	(0.018)	(0.019)	(0.023)
Father Degree	0.329**	0.513**	0.351**	0.500**
	(0.029)	(0.021)	(0.022)	(0.024)
Mideast Sweden			0.059*	0.048
			(0.028)	(0.029)
Southeast Sweden	0.153**	0.155**		
	(0.019)	(0.020)		
Middle Sweden	-0.079**	-0.086**		
	(0.020)	(0.021)		
Southern Norrland	0.102**	0.104**		
	(0.026)	(0.027)		
Northern Norrland	0.131**	0.155**		
	(0.023)	(0.023)		
Western Sweden	0.028	0.024	0.128**	0.123**
	(0.019)	(0.019)	(0.021)	(0.022)
Southern Sweden	0.219**	0.205**	0.173**	0.176**
	(0.026)	(0.027)	(0.021)	(0.022)

**indicates significant on the 1 % level, * indicates significant on the 5 % level.

Inclusion of the residual produces a couple of noteworthy results. First, its estimate is significant and positive, attesting to the predictive power of latent youth characteristics in subsequent scholastic achievement. Second, even after controlling for the latent dimension, the quartile ranks of grades remain highly significant, and they retain the ascending order of magnitudes from lowest quartile to highest. Perhaps as expected, the magnitudes are reduced by inclusion of the residual, but they nonetheless argue for academic achievement *per se* as an impetus for future success. Estimates for individuals originating outside the large metropolitan areas are shown in columns 3 and 4. The coefficients appear in the whole to be consistent with their counterparts in the large metropolitan sample. While comparison across samples does reveal some differences in magnitude and precision, the important general inference is that

academic and family backgrounds are important in formation of potential power spouses. Significantly, these factors include latent abilities and academic motivations, as proxied by deviations from the cohort norm of grades at the compulsory year 9 of schooling.

Estimates in columns 3 and 4 again reveal some regional variation in university completion. Relative to (reference) Mid East Sweden, completion appears higher in Southeast Sweden, South Sweden, and Northern Norrland. There is evidence of a deficiency in Middle Sweden, and to a lesser extent in West Sweden. These differences are of some policy interest, since they control for individual youth achievement and family background. They illustrate the importance of accounting for regional disparities in research concerning individual outcomes in education and training.

(Future) Spouse's Attainment of University Degree

As described above, in the sampling design the unit of observation is a young individual of either gender who is observed during the completion of youth-age schooling. For those who later are partnered in couples around age 30, we are able to identify their spouses, again traced back in time to school age.

Table 4 presents estimates of equation (2), eventual university completion by the future spouse of the individual in question. The specification is based on characteristics of the individual modeled in Table 3. The estimates indicate, consistent with Table 3, that spouses' degree completion, and hence future power spouse status, is predicted by the individual's school grades, with coefficients again ascending systematically from quartiles 2 through 4. The year 9 grade residual is likewise positive and significant, as are the family income and education attainments of parents. The negative gender coefficient indicates that potential spouses of females are less likely to complete university degrees.

Table 4. Trivariate Probit Model Estimates: Equation 2. Spouse completes a university degree (***Power Spouse***)

Variable	Origin LLMA		Origin MLMA SLMA	
GPA Q4	1.218**	0.293**	1.243**	0.564**
	(0.019)	(0.049)	(0.025)	(0.063)
GPA Q3	0.779**	0.165**	0.765**	0.322**
	(0.017)	(0.034)	(0.024)	(0.044)
GPA Q2	0.398**	0.025	0.413**	0.145**
	(0.017)	(0.024)	(0.025)	(0.023)
Residual		0.350**		0.247**
		(0.018)		(0.022)
Female	-0.564**	-0.434**	-0.471**	-0.381**
	(0.012)	(0.014)	(0.016)	(0.018)
Family income	0.070**	0.108**	0.048**	0.079**
	(0.004)	(0.005)	(0.005)	(0.005)
Mother Degree	0.243**	0.362**	0.296**	0.385**
	(0.015)	(0.016)	(0.019)	(0.019)
Father Degree	0.267**	0.369**	0.255**	0.332**
	(0.017)	(0.018)	(0.021)	(0.021)
Mideast Sweden			-0.019	-0.011
			(0.026)	(0.027)
Southeast Sweden	0.096**	0.099**		
	(0.018)	(0.019)		
Middle Sweden	-0.089**	-0.094**		
	(0.019)	(0.019)		
Southern Norrland	0.062**	0.064**		
	(0.024)	(0.024)		
Northern Norrland	0.129**	0.141**		
	(0.021)	(0.021)		
Western Sweden	-0.014	-0.013	0.048*	0.048**
	(0.018)	(0.019)	(0.020)	(0.020)
Southern Sweden	0. 105**	0. 090**	0.086**	0.098*
	(0.024)	(0.025)	(0.019)	(0.020)

*indicates significant on the 1 % level, * indicates significant on the 5 % level.

Alternative extended models including controls for family income and education of spouses parents were estimated (results not reported here, available on request). Positive and significant coefficient estimates on both sets of family background variables were found. Indeed, there appears to be some association, clearly not causation, with education of both sets of parents. The implication is that power couples at approximately age 32 share a similarity of parental influence during their formative years. A related interpretation is that this represents a type of peer effect among youth, and it is potentially useful for future research.[10] Similar to Table 3, there are disparate regional precursors to degree completion.

Location in Large Labor Market Area

Table 5 presents probit estimates of equation (3). As with Tables 3 and 4, the model is estimated for the sample partitioned into individuals who originate from large metropolitan LMA's and those from small and medium LMA's. Within each partition, the model is estimated first excluding and then including the year-9 grade residual.

Table 5. Trivariate Probit Model Estimates: Equation 3. Residing in a Metro location. ***(LLMA)***

Variable	**Origin LLMA**		**Origin MLMA SLMA**	
GPA Q4	0.784**	0.200**	0.341**	0.201*
	(0.023)	(0.058)	(0.034)	(0.029)
GPA Q3	0.470**	0.091*	0.197**	0.106*
	(0.022)	(0.041)	(0.032)	(0.042)
GPA Q2	0.186**	-0.041	0.078**	0.013
	(0.023)	(0.030)	(0.031)	(0.020)
Residual		0.221**		0.058*
		(0.021)		(0.020)
Female	-0.022	0.062**	-0.030	-0.058**
	(0.014)	(0.017)	(0.022)	(0.018)
Family income	0.046**	0.075**	0.008	0.019*
	(0.005)	(0.006)	(0.005)	(0.005)
Mother Degree	0.238**	0.314**	0.118**	0.137**
	(0.017)	(0.019)	(0.019)	(0.022)
Father Degree	0.280**	0.339**	0.193**	0.207**
	(0.020)	(0.021)	(0.021)	(0.022)
S_OriginLLMA	1.387**	1.398**	0.834**	0.828**
	(0.021)	(0.018)	(0.026)	(0.026)
S_OriginMLMA	-0.234**	-0.227**	-0.572**	-0.571**
	(0.015)	(0.016)	(0.028)	(0.029)
Origin Mideast Sweden			-0.870** ¨	-0.859**
			(0.033)	(0.034)
Origin Southeast Sweden	0.084**	0.079**		
	(0.022)	(0.022)		
Origin Middle Sweden	0.017	0.025		
	(0.023)	(0.023)		
Origin Southern Norrland	-0.052	-0.049		
	(0.030)	(0.030)		
Origin Northern Norrland	-0.120**	-0.109**		
	(0.027)	(0.027)		
Origin Western Sweden	0.145**	0.151**	0.185**	0.183**
	(0.022)	(0.022)	(0.019)	(0.020)
Origin Southern Sweden	0.236**	0.247**	-0.259*	-0.257
	(0.028)	(0.028)	(0.019)	(0.019)
S_Mother Degree	0.200**	0.198**	0.143**	0.148**
	(0.017)	(0.018)	(0.019)	(0.020)
S_Father Degree	0.226**	0.218**	0.184**	0.180**
	(0.020)	(0.020)	(0.029)	(0.022)

*indicates significant on the 1 % level, * indicates significant on the 5 % level.

As described in Section II, the dependent variable equals one for individuals who by the year 2006 reside in large metropolitan LMA's. The estimates indicate the importance of youth academic achievement for future location choice, particularly for students performing in

the third and fourth quartiles. After controlling for quartile rank, the grade residual is significant for individuals originating in both types of LMA's. For those whose origins are outside the large metropolitan LMA's the residual seems to exert an extra positive and significant effect on large LMA location. The implications that youthful high achievers from smaller regions develop propensities as adults to undertake human capital investment in the form of migration to large LMA's. Individuals with these traits starting out from metropolitan areas show a tendency to stay in metropolitan area of origin or migrate to another metropolitan area.

Parental education is an impetus for location in large LMA's. The same is true of youth-age family income. It is interesting to note that the individual is more likely to reside in a large LMA if his spouse originated at age 16 in a large LMA, and less likely if the spouse originated in a medium size LMA.

There are clear regional differences in location outcomes for both sample partitions. For individuals originating in large LMA's, those from West Sweden are more likely to locate in large LMA's than their counterparts from the reference region of Stockholm; the opposite is true of those from Mid-East Sweden. In the other sample partition, location in large LMA's is greater among persons from the West, South, and Southeast. The conditional probability of residing in a metropolitan area is lower for individuals who resided in Northern Norrland at age 16. Again, results from extended specifications including spouse's parental background characteristics indicated throughout positive influence of parents' education and family income.

For the individuals starting out in more rural areas, locating in a regional center can be seen as migrating to a larger labor market region or to a "metropolitan area". Therefore, an alternative definition of metropolitan area or Large LMA was tested for individuals starting outside a large LMA. The regional centers in each county was then included in the definition of a Large LMA. Our results presented above are generally robust to this alteration. The estimated positive association between GPA and location in a Large LMA showed a somewhat stronger effect. Again, in estimations with the residual, the results indicate a weaker effect of the GPA on the location choice.

Estimated Latent Correlations

As described in Section II, the estimated covariance parameters are informative about the mutual associations among the random error terms. Since the respective variances are equal to 1 by construction of the probit model, the covariance estimates can be interpreted as pairwise correlations, after controlling for measured factors. They serve as indexes of self-selection,

arising from unmeasured heterogeneity, in the process of spouse matching by education and location choice.

Table 6. Estimated Covariance Parameters.

	Origin LLMA	**Origin LLMA**	**Origin MLMA SLMA**	**Origin MLMA SMLA**
	(1)	(2)	(1)	(2)
Rho (*power, power spouse*)	0.416**	0.393**	0.434**	0.428**
$\hat{\rho}_{\varepsilon\nu}$	(0.009)	(0.009)	(0.007)	(0.007)
Rho (*power, LLMA*)	0.072**	0.063**	0.193**	0.191**
$\hat{\rho}_{\varepsilon\eta}$	(0.010)	(0.010)	(0.009)	(0.009)
Rho (*power spouse, LLMA*)	0.116**	0.110**	0.240**	0.236**
$\hat{\rho}_{\nu\eta}$	(0.009)	(0.010)	(0.008)	(0.008)

Table 6 presents estimates of the correlations, for both sample partitions and for specifications with and without the school grade residual. They correspond to the respective columns shown in Tables 3 through 5. The estimates indicate a significant tendency toward matching of power spouses on youth age latent characteristics: $\hat{\rho}_{\varepsilon,\nu}$ ranges from 0.39 to 0.43 and is strongly significant. The interpretation is that, for individuals at age 16, unobserved heterogeneity that positively affects future attainment of university degree is associated with higher probability of later matching with power spouse. This is consistent with spouse matching evidence suggested by Nakosteen, Westerlund, and Zimmer (2004).[11]

The correlation between latent factors in the individual's power status and location in a large LMA, $\hat{\rho}_{\varepsilon\eta}$, is positive and statistically significant but more modest in magnitude especially for the sample originating outside large LMA's. Thus the unmeasured "pull" between power status and large LMA residence is not as large as the latent matching tendency between potential power spouses.

The third row, presenting $\hat{\rho}_{\nu\eta}$, captures the analogous estimate for power couple formation and location in LLMA. The correlations are positive and highly significant, although again smaller than the spouse matching estimates in the first row.

Multinomial Logit Coefficients: Location Choice

Table 7 presents estimates of the multinomial logit model for location choice, represented by equation (4). As described in Section IV, the sample for these estimates consists of couples in 2006 and the set- up is analogous with Compton and Pollak (2007). In addition to explanatory variables measuring the individual's age-16 characteristics, the logit model includes variables that describe the couple's power status. These require information on completion of university

education, which for most individuals occurs after age 16. The dependent variable, measured at approximate age 32, is based on the population size of the Labor Market Area of residence in 2006. Individuals are classified as residing in a small LMA, medium LMA, or large metropolitan LMA, the latter again defined as greater Stockholm, Göteborg or Malmö. The reference category is stayers, who reside at age 32 in the LMA of residence from age 16. The table contains a set of estimates for the full sample. Similar to Tables 3 – 6, estimates are displayed in columns 1 – 3 for the specification that excludes the year 9 grade residual and then in columns 4 – 6 with the residual included.

Table 7. Multinomial logit estimates. Base outcome is residence in age 16 LMA. The other alternatives are migration to respective LMA.

	Large LMA	**Middle LMA**	**Small LMA**	**Large LMA**	**Middle LMA**	**Small LMA**
Grade Q4 (highest)	0.784**	0.310**	0.109	0.240**	0.196*	0.306**
	(0.041)	(0.040)	(0.059)	(0.076)	(0.079)	(0.113)
Grade Q3	0.484**	0.151**	-0.021	0.129*	0.074	0.112
	(0.039)	(0.037)	(0.052)	(0.057)	(0.058)	(0.083)
Grade Q2	0.160**	0.042	-0.087	-0.053	-0.005	-0.004
	(0.040)	(0.037)	(0.049)	(0.049)	(0.045)	(0.064)
Residual				0.221**	0.047	-0.083*
				(0.027)	(0.028)	(0.039)
Power_MW	1.480**	1.228**	0.313**	1.441**	1.219**	0.327**
	(0.031)	(0.033)	(0.054)	(0.032)	(0.033)	(0.054)
Power_W	0.428**	0.309**	0.043	0.415**	0.305**	0.050
	(0.033)	(0.034)	(0.047)	(0.033)	(0.034)	(0.047)
Power_M	0.860**	0.622**	0.045	0.840**	0.619**	0.051
	(0.042)	(0.046)	(0.073)	(0.042)	(0.046)	(0.073)
Family income	0.003**	-0.007**	-0.012**	0.005**	-0.006**	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Mother Degree	0.278**	0.086**	0.097*	0.353**	0.103**	0.070
	(0.026)	(0.029)	(0.046)	(0.028)	(0.031)	(0.048)
Father Degree	0.390**	0.120**	0.217**	0.453**	0.133**	0.193**
	(0.029)	(0.034)	(0.054)	(0.030)	(0.035)	(0.055)
Origin Mideast	2.374**	1.075**	0.643**	2.367**	1.074**	0.645**
Sweden	(0.066)	(0.048)	(0.077)	(0.066)	(0.048)	(0.077)
Origin Southeast	2.894**	1.441**	1.321**	2.889**	1.440**	1.323**
Sweden	(0.068)	(0.051)	(0.077)	(0.068)	(0.051)	(0.077)
Origin Middle	2.852**	1.328**	1.362**	2.842**	1.326**	1.366**
Sweden	(0.069)	(0.053)	(0.077)	(0.069)	(0.053)	(0.078)
Origin Southern	2.698**	1.263**	1.598**	2.695**	1.262**	1.560**
Norrland	(0.076)	(0.064)	(0.086)	(0.076)	(0.064)	(0.086)
Origin Northern	2.473**	1.456**	1.516**	2.476**	1.456**	1.516**
Norrland	(0.074)	(0.056)	(0.081)	(0.074)	(0.056)	(0.081)
Origin Western	2.367**	0.837**	0.734**	2.361**	0.836**	0.736**
Sweden	(0.066)	(0.049)	(0.075)	(0.066)	(0.049)	(0.075)
Origin Southern	2.057**	0.457**	0.114	2.049**	0.457**	0.1116
Sweden	(0.068)	(0.054)	(0.087)	(0.068)	(0.054)	(0.087)
N		81,650			81,650	
Psudo R^2		0.0944			0.0949	

**indicates significant on the 1 % level, * indicates significant on the 5 % level.

The logit model includes academic achievement and family background variables corresponding to the individual identified by equation (1). Although the unit of observation for the logit model is a couple, inclusion of background data for both spouses can be problematic because of high correlations between characteristics such as education and family background, which arise due to spouse matching.

The principal purpose of the model is to illuminate the role of power couple status in the choice of locations. For both specifications, the estimates indicate a strong propensity for migration to large LMA's for power couples. The coefficients are largest for location in large LMA's and smallest for small LMA's. A somewhat similar tendency is evident for part power couples, albeit considerably less pronounced than for power couples. For part power couples, there is no significant tendency to choose small LMA's relative to remaining in the origin LMA. Among part power couples, the propensity to relocate is larger for those in which the husband possesses the degree.

These findings are consistent with Compton and Pollak (2007), in particular to the extent that the male power credential appears to be relatively strong in determining location choice. But a main difference in relation to Compton and Pollak is that their evidence suggests it is only part power couples with power males that prefer metropolitan areas. The evidence here indicates that this also applies to part power couples where the female is the university graduate.

In the first specification, columns 1 – 3, the grade quartile is strongly conducive to migration to large and medium size LMA's, and the coefficient magnitudes increase with the quartile rank. The estimates are also of greater magnitude for large LMA's than for medium LMA's. This result is noteworthy, since school grades are strongly reflected in the power status dummy variables (Tables 3 and 4), which are already accounted for in the model. The implication is that youth academic achievement exerts an effect on location choice distinct from its association with formal education and power status, implying that there is a stronger tendency of skill agglomeration to larger labor markets than indicated by educational attainment. The subtlety of this effect is suggested by results in the second specification, columns 4 – 6. When the grade residual is added to the model, its coefficient is positive and significant for location in large and medium LMA's, the point estimates decreases by size of LMA and is even negative and significant for small LMA's. Thus, while academic achievement affects location choice through its important role in determining power status, it also exerts a direct effect on human capital investment in the form of migration. Inclusion of the residual reduces the size and significance for several of the quartile grade coefficients. An exception is the coefficient for migration to small LMA's, which becomes larger and strongly significant.

The family background variables indicate that individuals with highly educated parents or from high income families are more likely to form couples that migrate from their origin locations. The family income coefficients suggest that high family income tends to induce migration to large LMA's and reduces mobility to medium and small size LMA's. Finally, as expected, the region-of-origin dummy variables show evidence of greater location to large LMA's from every region outside Stockholm.

Multinomial Logit: Relative Risk Ratios

For another view of the results from the logit model of location choice, Table 8 presents estimates of the marginal effect of each variable on the probability of each available alternative relative to the base category of no migration. For the sake of brevity, the table is limited to the academic and family background variables at age 16 and the power status variables at age 35.

The relative "risk" of migration seems most apparent for the power status variables. Referring first to columns 1 – 3, full power couples, for example, are more mobile than part power couples, and they are prone to choose large metropolitan areas; they are 4.5 times more likely to locate in large LMA's than to stay, 3.5 times more likely to choose MLMA's, and 1.4 times more likely to choose SLMA's.

Table 8. Relative Risk Ratios for Location Choice. Base outcome is residence in age-16 LMA

	Large LMA	**Middle LMA**	**Small LMA**	**Large LMA**	**Middle LMA**	**Small LMA**
Grade Q4	2.12**	1.32**	1.02	0.94	1.03	0.97
Grade Q3	1.59**	1.14**	0.92	0.93	0.97	0.90
Grade Q2	1.16**	1.03	0.88*	0.84**	0.93	0.87*
Residual				1.37**	1.10**	1.02**
Power	4.47**	3.45**	1.41*	4.26**	3.40**	1.40**
Power_W	1.54**	1.37**	1.05	1.51**	1.36**	1.06
Power_M	2.38**	1.87**	1.06	2.35**	1.86**	1.06
Family income	1.02**	0.99**	0.98**	1.01**	0.99**	0.99**
Mother Degree	1.82**	1.09**	1.11**	1.48**	1.13**	1.12**
Father Degree	1.47**	1.12**	1.25**	1.62**	1.61**	1.25**

**indicates significant on the 1 % level, * indicates significance on the 5 % level.

In turn, part power couples show greater propensity to relocate than low power couples, and within the part power population, those in which the husband holds the degree relocate with greater probability than those in which power is represented by the wife. Part power couples are not significantly more likely to choose small regions than are low power couples. Stated

differently, the relative odds indicate that power tends to gravitate to medium and large regions, and full power couples do so to a greater extent than part power couples. These conclusions are robust with respect to inclusion of the grade residual in the model (columns 4 – 6).

For part power couples where the female is power, the diverging result relatively to the findings on U.S. data (Compton and Pollak, 2007) is confirmed. The estimated relative risk ratio of location in Large LMA's is lower than for part-power couples where the male is power, but the estimates indicate a substantial positive impact of female power. The remaining odds ratios can be read in similar fashion. Perhaps most noteworthy is the fact that school grades matter for location in large LMA's, even after accounting for the direct role of grades in determining power status. For example, conditional on power status, achievers in the highest quartile are more than twice as likely to locate in large areas as those who score in the lowest quartile. Evidently, youth-age school grades convey something important about spouse matching *and* location decisions later in life.

VI. Conclusion

This paper contributes to a recent and growing literature addressing the phenomenon of high-credentialed power couples. Recent papers have attempted to explain the apparent preference of power couples to reside in large metropolitan areas. They have necessarily utilized samples with limited retrospective information, mostly from time points after their formation, to model the choice of location. What has not been explored to date is the manner in which power couples are formed to begin with. This study addresses that issue, seeking to determine the extent to which precursors of power couple formation are evident in young people during their formative school years. Its second objective is to determine whether those youth-age background factors are influential in location choice at adult age, given the power status of couples.

Using Swedish register data, we produce evidence that youth background appears to matter in a significant way. The evidence indicates that power spouses are drawn from the population of power youth, the latter identified by high achievement during the compulsory years of schooling. The compulsory nature of those years serves a useful empirical purpose, because high achievement at that age is not likely to be confounded by self-selection in school enrollment. Other factors that contribute importantly to power status are high education attainment by parents, and family income. It appears also that there are regional disparities in the evolution of power spouses, after controlling for academic performance and family background.

The evidence also points to the presence of unmeasured heterogeneity. First, students who perform above the regression-adjusted grades of their respective regional cohorts

tend to become potential power spouses, even after controlling for their observed ranks in the cohort grade distribution. Second, marital matching tends to pair power spouses with one another on the basis of unobservables: individuals who for unmeasured reasons attain university completion, i.e., after controlling for school grades and family background, tend to match with similarly endowed spouses to become power couples. Third, there is a modest degree of latent self-selection in migration of power individuals to large metropolitan areas, again after controlling for background variables. In short, power individuals, who evolve toward that status at young ages, are drawn to one another and to large labor markets.

Regarding location choice, our results from a multinomial logit model confirm what has been reported in the literature, namely that power couples display a tendency to migrate from their regions of origin to large cities. Our results add evidence of the influence of youth achievement and family background. These effects appear to be distinct from the influence they exerted on formation of the power couple in the first place. The empirical evidence presented here imply that the agglomeration of skills to larger labor market regions is understated in studies measuring power or human capital by level of educational attainment only. In contrast to findings on U.S. data, we find evidence of power females in part-power couples having influence on location choice.

Endnotes

1. See also "Trends in Urbanisation and Urban Policies in OECD Countries: What Lessons for China?" OECD Publishing 2010.
2. An area of power couple research somewhat unrelated to this study addresses patterns of childbearing and union stability. Dribe and Stanfors (2010), using population register data from Sweden, report that power couples show a greater tendency toward continued childbearing and are less likely to dissolve their unions than other couples.
3. For further description of the data base see Bonita *et al*. (2010).
4. Due to this construction, an individual can appear twice; first as a partner and secondly as individual if both spouses are born in either 1974 or 1976. This is true for 25 % of the sample. Estimations when clustering the standard error for couples that appear twice does not change the results.
5. Alternative definitions of "metropolitan region" have been tested and are discussed in the result section.

6. In other versions of the specification, we replace the quartile grade rank both with the year 9 grades itself and with GPA Quintiles, confirming the effect of the GPA showed here. The results lead to identical inferences as those presented in Tables 3 – 7. These results are not reported here but are available on request.
7. There were approximately 2500 parishes in the 1990's, in contrast to 87 LMAs, reflecting a more homogenous socioeconomic population.
8. This follows the Nomenclature of Units for Territorial Statistics (NUTS) classification of administrative boundaries, made by Eurostat. NUTS2, the level used here, incorporates counties or group of counties with a population between 28,000 and 3,000,000.
9. Appendix B presents a map of the regional partition.
10. Other research that exploits parental attributes includes papers by Lam and Schoeni (1993, 1994). Using data for couples from the United States and Brazil, they estimate models of hourly wages for husbands that include several measures of wives' family backgrounds. The estimates indicate a significant relation between husbands' wages and education of the father-in-law. Lam and Schoeni interpret the result to mean that some unmeasured traits of husbands are proxied by observed characteristics of their wives' fathers, reflecting an underlying process of marital matching.
11. The magnitude of the correlation is net very deviant from other spousal correlations that have been widely reported in social science literature. For example, it is well known that the correlation between heights of spouses is in the range of 0.30 to 0.40. For correlation of IQ scores of spouses, estimates from 0.40 to 0.50 are common. Gilger (1991) report unconditional correlations of 0.40 of educational attainment and skill level of occupation (conditional correlations of 0.24-0.30).

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Appendix

Figure A. Map of Sweden by type of Labor Market Area.

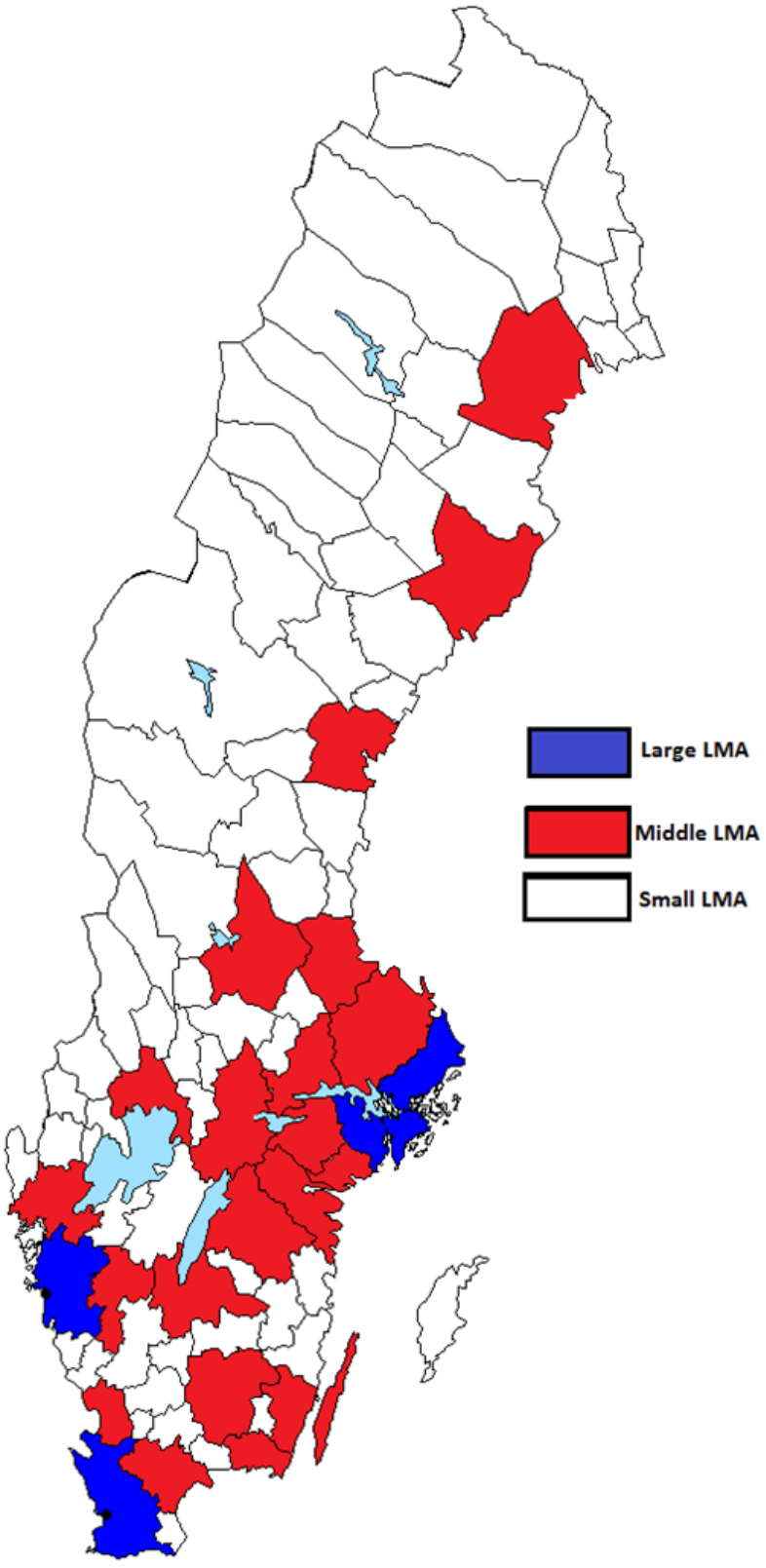

Figure B. Regional Divisions of Sweden according to NUTS2.